

Berlin

19th August 1999

Our reference:

LB8613

Applicants/proprietors:
et al.

Laser- und Medizin-Technologie gGmbH, Berlin,

Filing No:

PCT/DE 98/02695

New claims

1. An electrosurgery apparatus comprising an electrode carrier (31, 61a-c) at least one electrode (32, 33, 62, 63) on the electrode carrier, an alternating current source (81) conductively connected to the electrode by way of a cable, and a temperature control device (35, 64, 65, 84) for the electrode and the electrode carrier, wherein the electrode carrier is of a pointed configuration at its distal end, characterised in that there are provided means (85) by way of which the electrode and the electrode carrier are heatable independently of the electrical current strength through the electrode.

2. An electrosurgery apparatus as set forth in claim 1 characterised in that the electrode (32, 33, 62, 63) and the electrode carrier (31, 61a-c) are heatable to a temperature of more than 30 degrees.

3. An electrosurgery apparatus as set forth in claim 2 characterised in that the electrode (32, 33, 62, 63) and the electrode carrier (31, 61a-c) are heatable to a temperature of more than 37 degrees.

4. An electrosurgery apparatus as set forth in one of the preceding claims characterised in that the electrode (62, 63) and/or the electrode carrier (61a, 61b) has a cavity (64, 65) and that the temperature control device includes a temperature-controllable fluid source (83, 85) which is in communication with the electrode (62, 63) and/or the electrode carrier (61a, 61b) by way of a quantitative flow control device (84, 87).

5. An electrosurgery apparatus as set forth in one of claims 1 through 3 characterised in that the electrode (32, 33, 62, 63) and/or the electrode carrier (31, 61a-c) has a thermoelectric heating and cooling device.

6. An electrosurgery apparatus as set forth in one of the preceding claims characterised in that there is provided an effective temperature profile control device (87) which is connected by way of a control signal connection to the temperature control device (83).

7. An electrosurgery apparatus as set forth in claim 6 characterised in that the effective temperature profile control device (87) for controlling the alternating current power is connected by way of a control input to the alternating current source (81).

8. An electrosurgery apparatus as set forth in claim 6 or claim 7 characterised in that the effective temperature profile control device (87) includes an interactively programmable calculation unit (87.2) for determining simulated, time-dependent effective temperature profiles on the basis of parameters of the tissue and the electrode (82) and assumed parameters of the alternating current source (81) and the temperature control device (83), and for varying the assumed parameters to ascertain an optimized, time-dependent effective temperature profile.

9. An electrosurgery apparatus as set forth in one of claims 6 through 8 characterised by at least one low-inertia temperature sensor (86) which is connected to an input of the effective temperature profile control device (87) and which can be arranged in the body adjacent to the electrode (32, 33, 62, 63) or the electrode carrier (31, 61a-c).

10. An electrosurgery apparatus as set forth in claim 9 characterised in that the temperature sensor (86) is connected to an input of the calculation unit (87.2) and that the calculation unit (87.2) has means for verification or correction of a simulated, time-dependent effective temperature profile on the basis of the measurement signal of the temperature sensor.

11. An electrosurgery apparatus as set forth in one of the preceding claims characterised in that the effective temperature profile control device has means (87.1, 87.2, 87.6) for storing and calling up the time-dependency of control signals and for outputting control signals in accordance with a stored time-dependency.

12. An electrosurgery apparatus as set forth in one of the preceding claims characterised in that the electrode carrier (31, 61a-c) has a tubular element (61a, 61b) of electrically insulating material with a decreasing, in particular conical distal end, on the peripheral surface of which is arranged the electrode (62, 63) and in the interior of which is arranged the temperature control device (64, 65).

13. An electrosurgery apparatus as set forth in one of the preceding claims characterised by two electrodes (32, 33; 62, 63) on the electrode carrier (31; 61a, 61b).

add A1
add B1